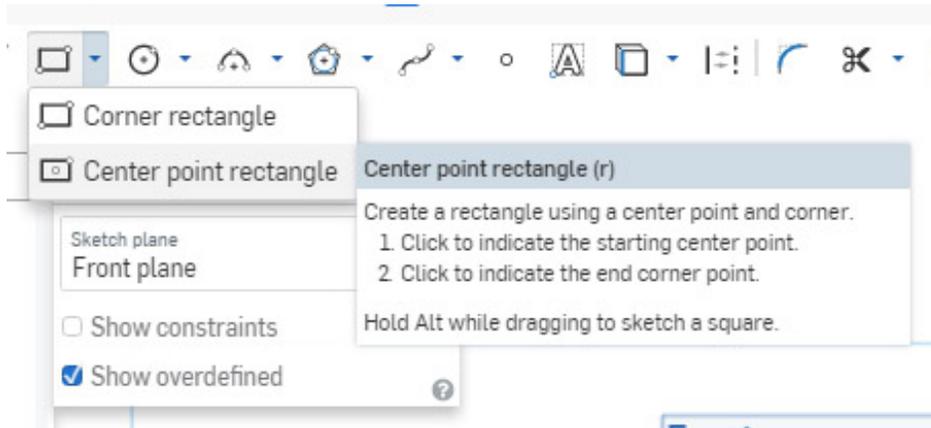


Onshape Lesson 2

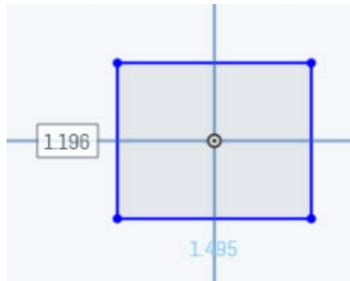
In this lesson you will create a cube with hole.

1. Create a new document and give it the name **Lesson 2**.
2. Create a new sketch by clicking the sketch button and select the front plane for drawing your two-dimensional sketch.
3. Click the right mouse button in a blank area of the workspace and select “view normal to sketch plane.”

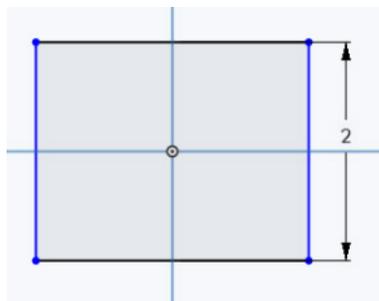
4. Click the down arrow next to the rectangle tool  and select the Center point rectangle tool.



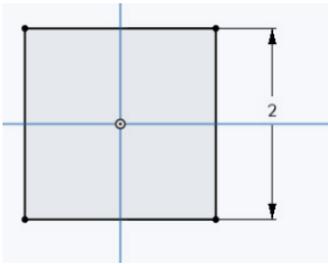
5. Place the mouse cursor over the center point of the front plane (center point turns orange), click the left button to set the center point of the rectangle. Then move the mouse away from the center point and click again to create a rectangle.



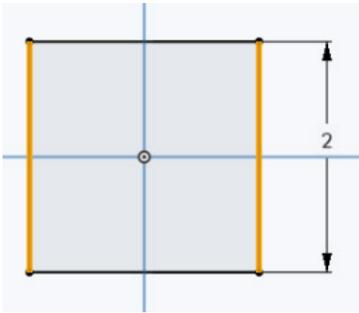
6. Use the dimension tool  to set the length of the right side to 2 inches.



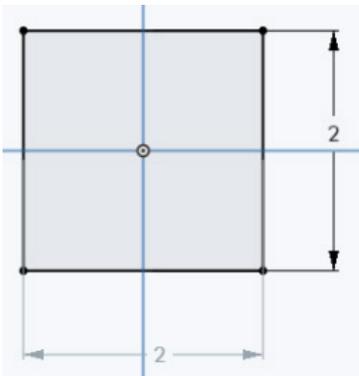
7. Select the Equal tool  with the mouse. Click one of the horizontal lines of the rectangle and then one of the vertical lines. Now the horizontal sides are also 2 inches long.



8. You could add a dimension to a horizontal side of the square but try something else first. Make sure there is not a tool selected in the toolbar (if the Equal button is blue, click on it to unselect). Click on the left side of the square and then the right side (both sides should be orange colored). Now look at the bottom right corner of the workspace window, where you will see the distance displayed as 2.000 inches. Any time you wish to determine the distance between two parts of a sketch or model, you can select those two parts (lines, points, etc.) and check the displayed distance in the corner of the workspace.

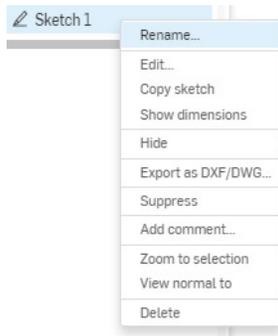


9. Make the sketch complete by using the dimension tool to add a dimension to one of the horizontal sides of the square.

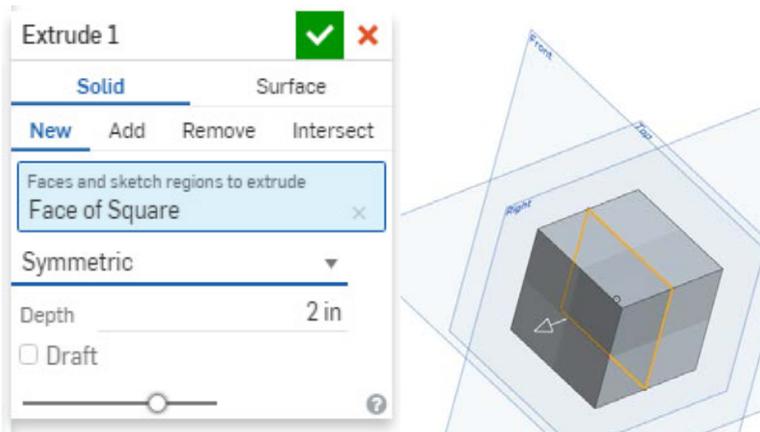


10. You are now finished with Sketch 1. Click its green square with check mark  to close it.

11. Click with right mouse button on **Sketch 1** in the Features list on the left side of the window. In the menu that opens, select **Rename**. In the text slot that opens, enter the name “square.” Then click on the green square with check mark to close the rename dialog. Notice that your first sketch has the name “square” in the Features list now instead of Sketch 1. As your model becomes more complex it is a good idea to name your sketches, extrudes, etc. When your model contains 15 sketches, you may forget what you did in “Sketch 1” but renaming it will help jog your memory.



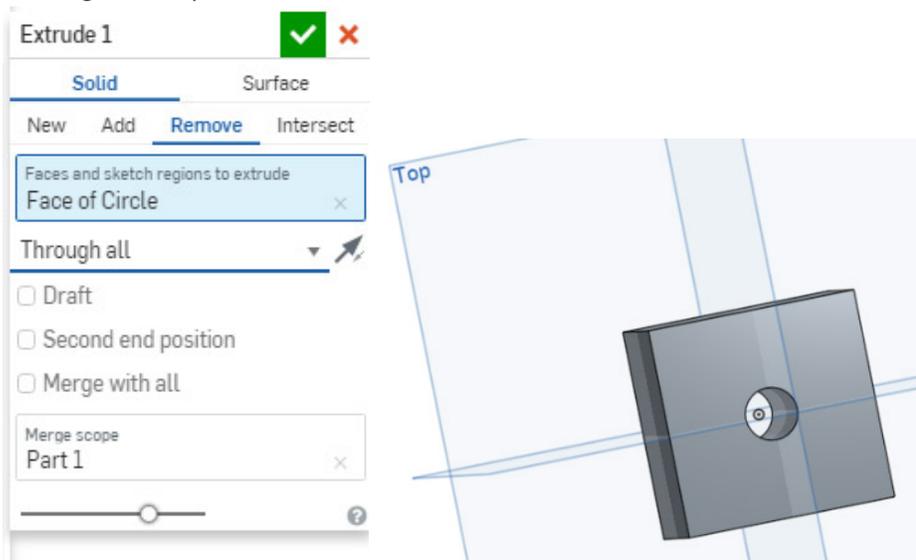
12. Now extrude the square of your sketch. Click the extrude tool . Then click on the square of your sketch to select it as the object to extrude. Select Symmetric as the type of extrude with a depth of 2 inches. A Symmetric extrude causes the 2-D object to be extruded equally in opposite directions away from the plane of the sketch. In this case, the square is extruded one inch in each direction, resulting in a cube. The center point of the cube coincides (is in the same place) as the center point of the Front plane. Now close Extrude 1 and rename it “Cube.”



13. Create a hole in your cube from top to bottom. To do this, create a new sketch by clicking the Sketch button.
14. Click on the top side of the cube to select it as the plane for the sketch.
15. Put mouse cursor in empty part of workspace, click with right mouse button and select “view normal to sketch plane.”

16. Select the Circle tool  and move the cursor over the center of the cube (center point should turn orange). Click the mouse to set the center point of the circle. Then move the mouse away from the center and click again to create a circle.
17. Use the Dimension tool to set the diameter of the circle to 0.5 inches.
18. Close the sketch and rename it "circle."

19. Select the Extrude tool  to create a hole in the cube. Place the mouse cursor over the circle created in step 16 and click to select it as the extrusion object. In the extrude box set the type of extrusion as Solid, Remove (remove because you want to make a hole), Through all (makes the hole go all the way through the cube). The cube now contains a half-inch hole running from top to bottom.



20. Close the extrude and rename it "bore hole."

This completes lesson 2.